

Fire Door Annual Inspection

Understanding the Fire-Rated Opening







Foundation's Mission:

Promote secure and safe openings that enhance life safety

The Foundation & DHI

Door
Security & Safety
FOUNDATION

- **First to create awareness for fire door inspections.**



- **Set the standard for education that qualifies individuals as the knowledgeable resource to perform fire door inspections.**

- **Not Familiar with Code Requirements**
- **Belief that frequency of use ensures proper operation**



Annual Inspection of Fire Door Assemblies…

- **Who Is Going To Do These Inspections and When?**
  - Paragraph 5-2.3, Functional Testing
    - Individuals who are KNOWLEDGEABLE about the openings being inspected
  - Paragraph 5-2.1, '…not less than annually, and a written record of the inspection shall be kept for inspection by the AHJ.'

Partial List of IFC 2009 Adoption

- Alabama (IBC, IFC)
- California (IBC, IFC)
- Colorado (Denver)
- Illinois (IBC, IFC)
- Iowa (IBC, IFC)
- Massachusetts (IBC)
- Maine (IBC,IFC - local)
- Maryland (IBC)
- Michigan (IBC,IFC - local)

IFC 2009 Adoption

- Montana (IBC, IFC – local)
- New Hampshire (IBC,IFC - local)
- New Jersey (IBC)
- New Mexico (IBC)
- New York (New York Building Codes)
- North Dakota (IBC,IFC - local)
- Oregon (IBC, IFC)
- Oklahoma (not statewide)
- Pennsylvania (IBC, IFC)
- Rhode Island (IBC, IFC- local)
- South Dakota (not statewide)

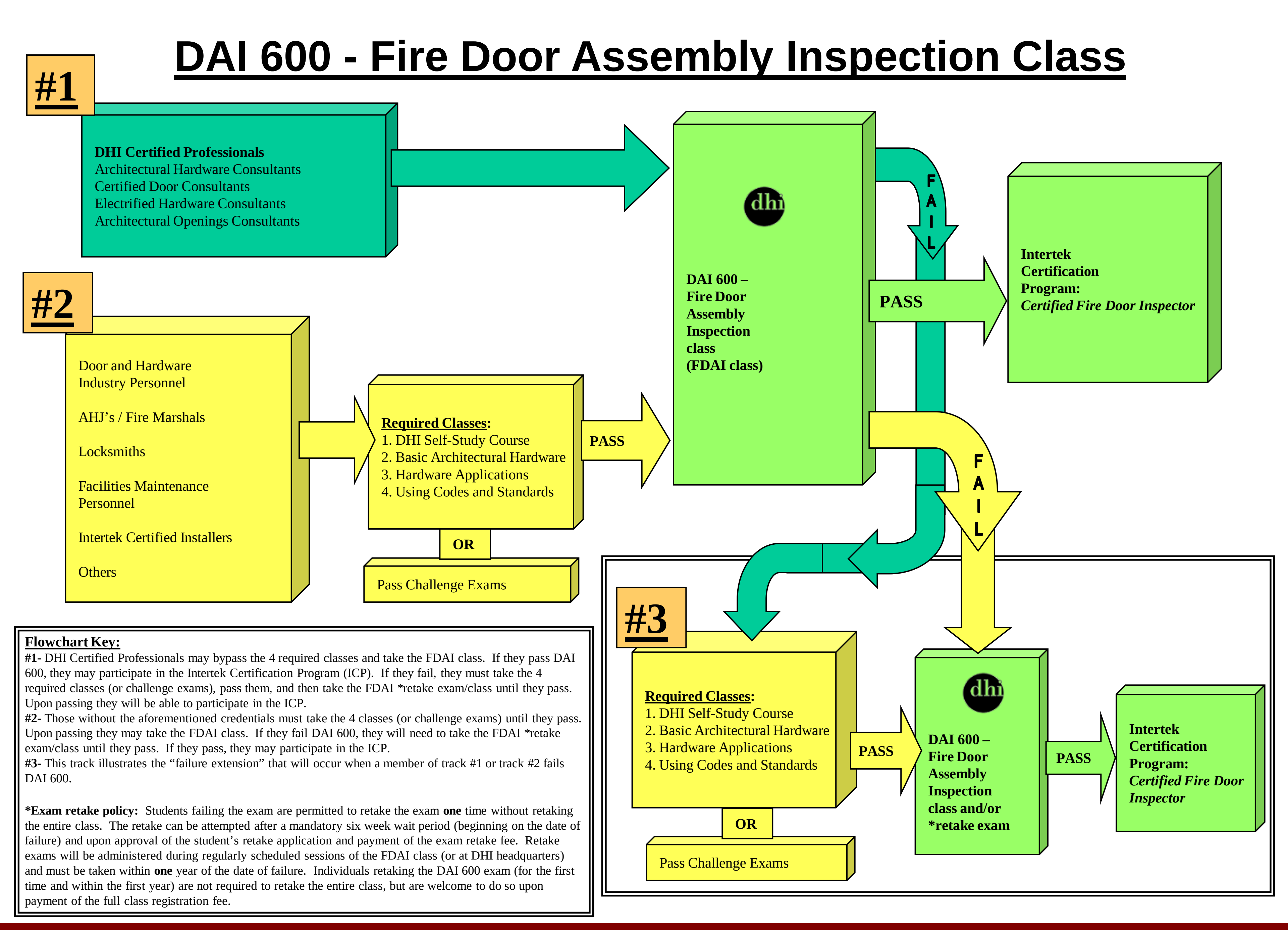
IFC 2009 Adoption

- **Utah (IBC, IFC)**
- **Virginia (IBC, IFC)**
- **West Virginia (IBC, IFC – local)**
- **Washington (IBC, IFC)**

- **Guam (IBC ’09, no IFC listing)**

Ohio – IFC 2006

- Ohio - ICC Explained.doc



Door Security & Safety Foundation

MGM Grand – Nov. 11th, 1980 Las Vegas – 85 killed, 700 injured





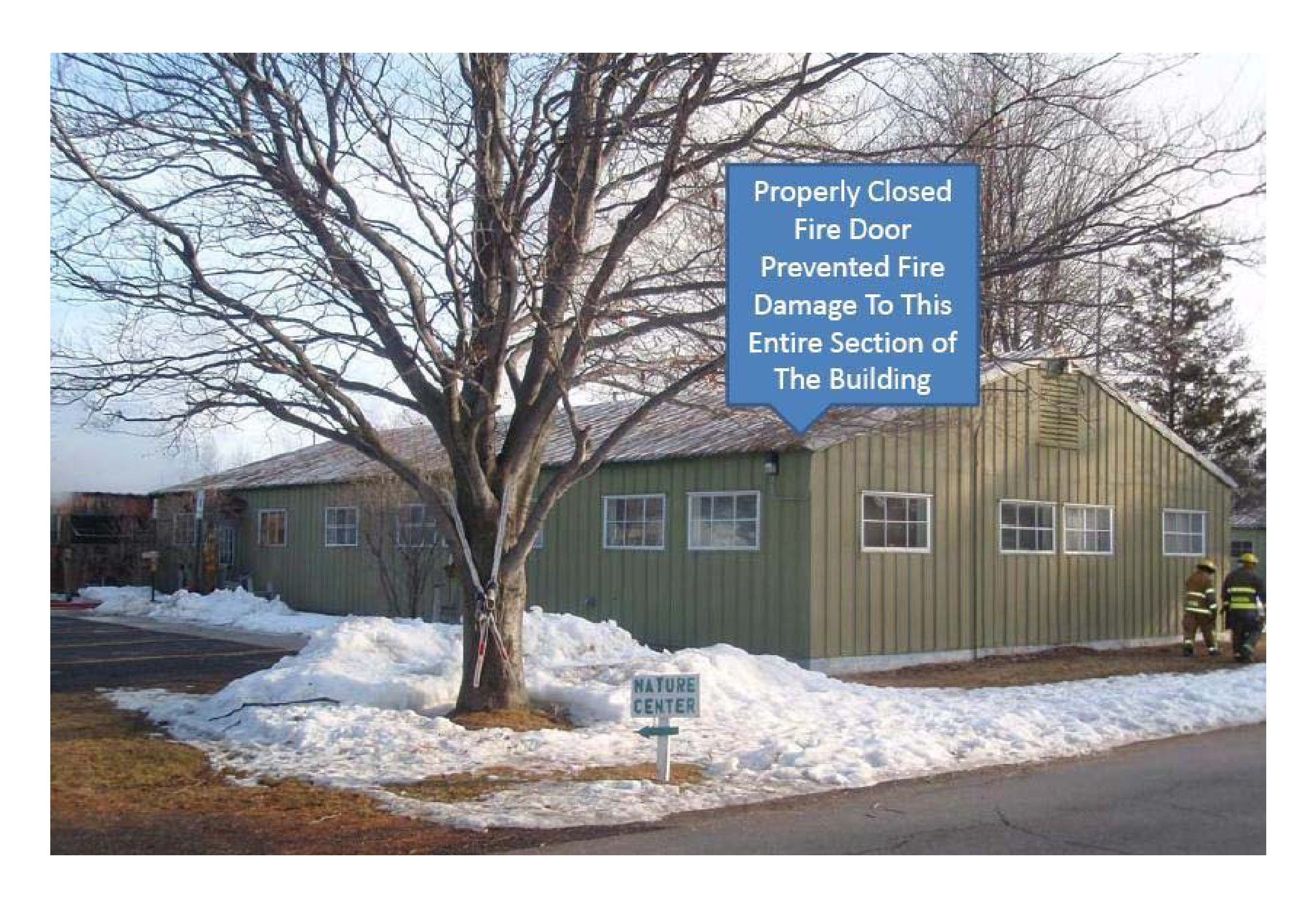
Fire Doors
Performing as Designed

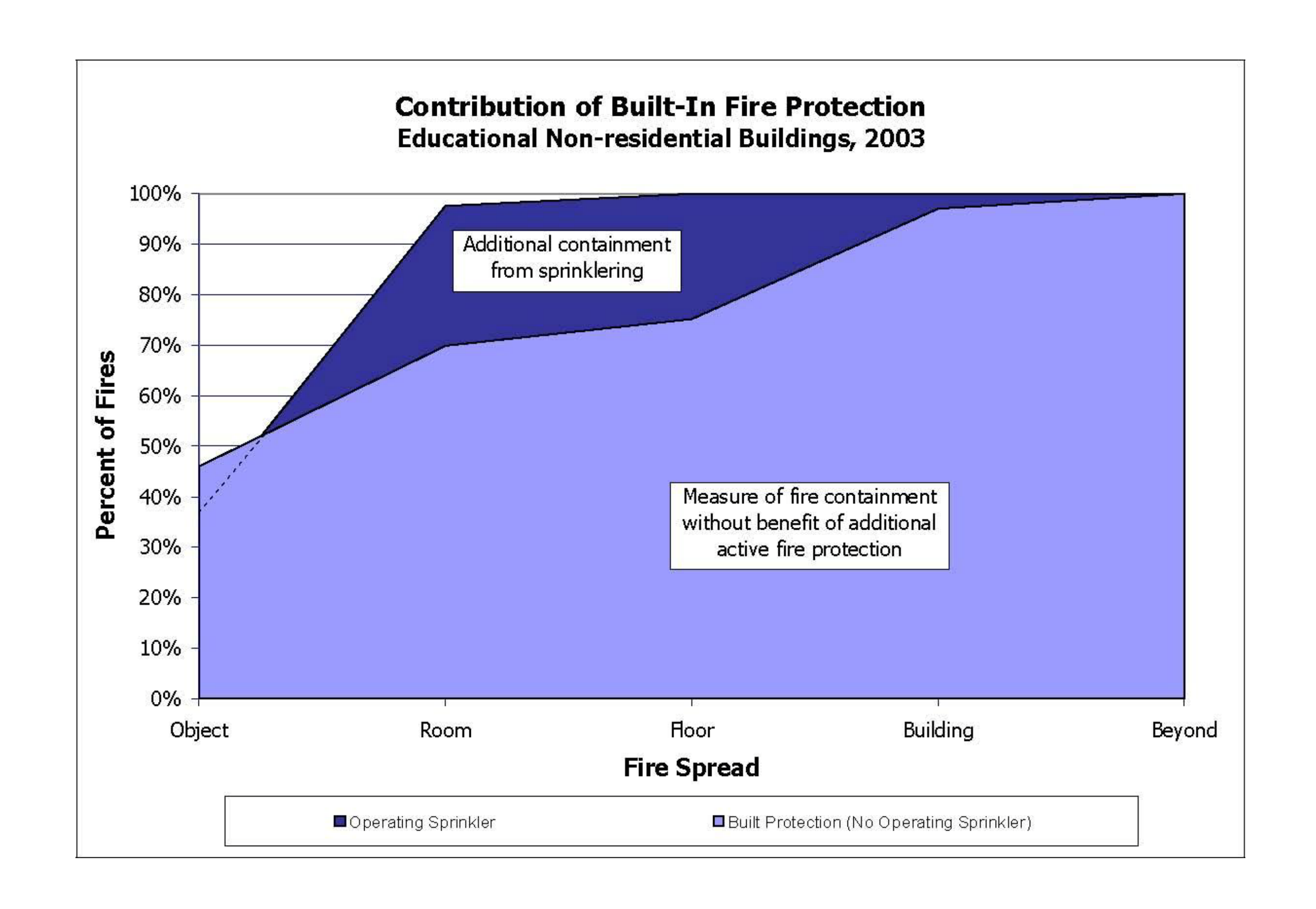


Fire Doors Performing as Designed

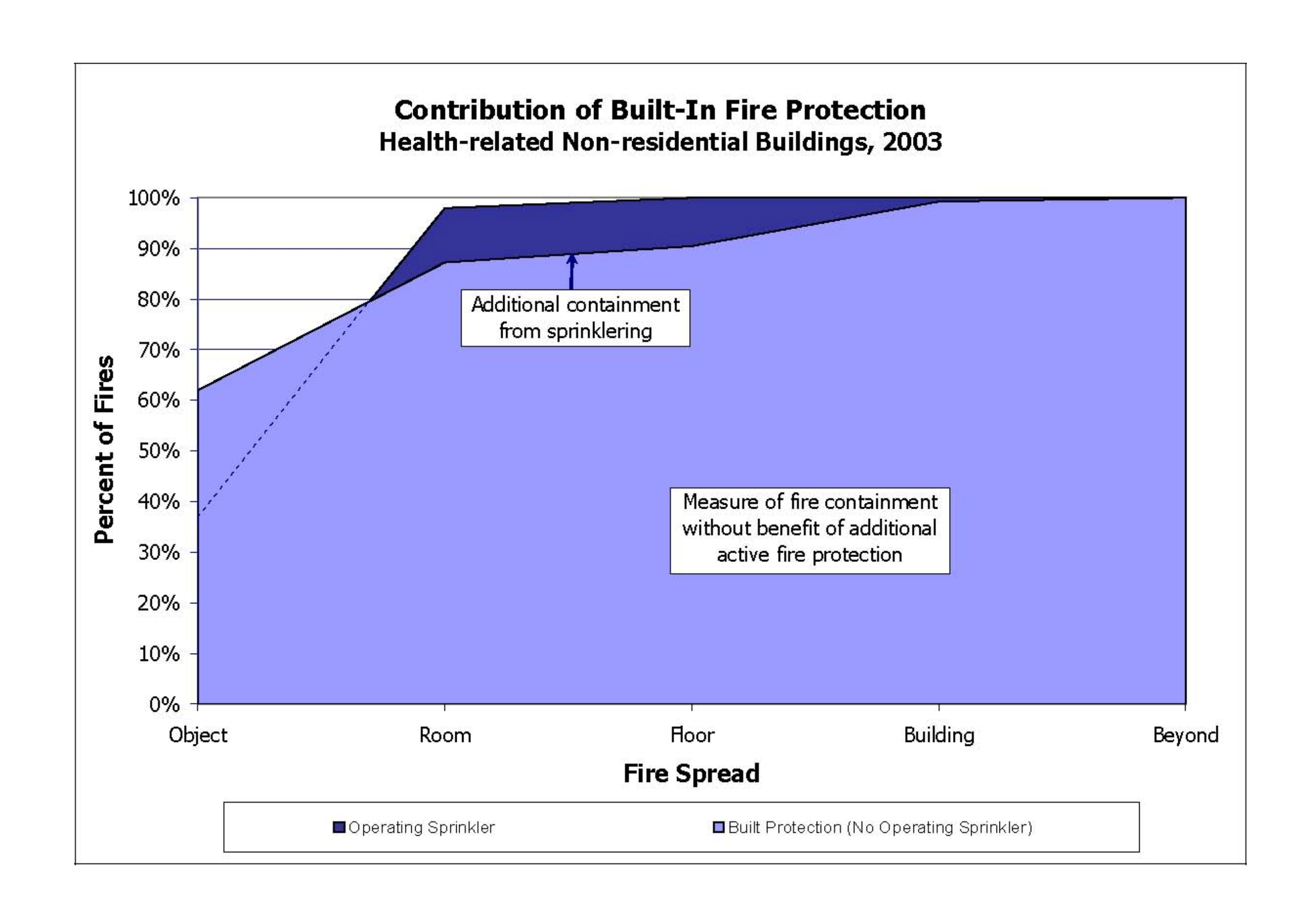


Properly Closed Fire Door





Contribution of Built-In Fire Protection
Educational Non-residential Buildings, 2003
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent of Fires
Additional containment from sprinklering
Measure of fire containment without benefit of additional active fire protection
Object
Room
Floor
Building
Beyond
Fire Spread
Operating Sprinkler
Built Protection (No Operating Sprinkler)



Contribution of Built-In Fire Protection
Health-related Non-residential Buildings, 2003
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent of Fires
Additional containment from sprinklering
Measure of fire containment without benefit of additional active fire protection
Object
Room
Floor
Building
Beyond
Fire Spread
Operating Sprinkler
Built Protection (No Operating Sprinkler)

Codes vs. Standards

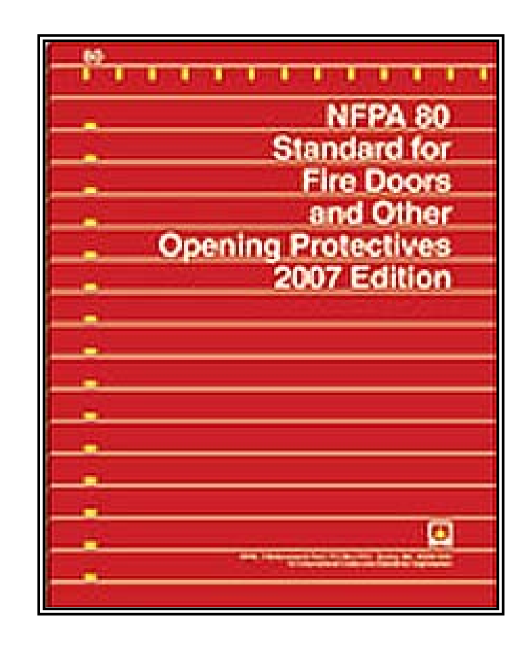
- **Codes are Intended to be Adopted as Legal Documents**
  - Enforceable as Laws

- **Standards are Intended to be Used to Meet the Requirements of Codes**
  - Unenforceable until REFERENCED by a CODE.

NFPA 80 – 2007 Edition

- **Establishes Basic Requirements for New Fire-Rated Door Assemblies**

- **Establishes Care and Maintenance Requirements**



NFPA 80 2007—Standard for Fire Doors

5.2.4.2 As a minimum, the following items shall be verified:

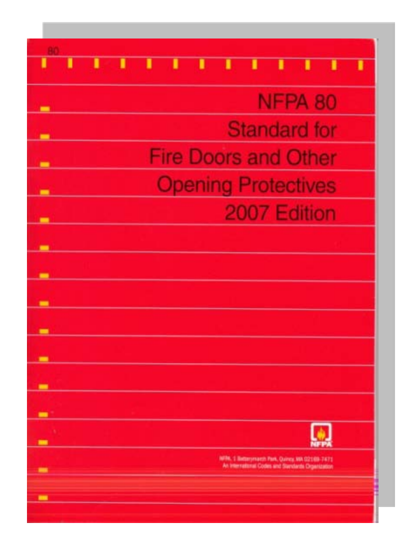
(1) No open holes or breaks exist in surfaces.

(2) Glazing, vision light frames, and glazing beads are intact.

(3) The door, frame, hinges, hardware, and noncombustible threshold are secured, aligned, and in working order.

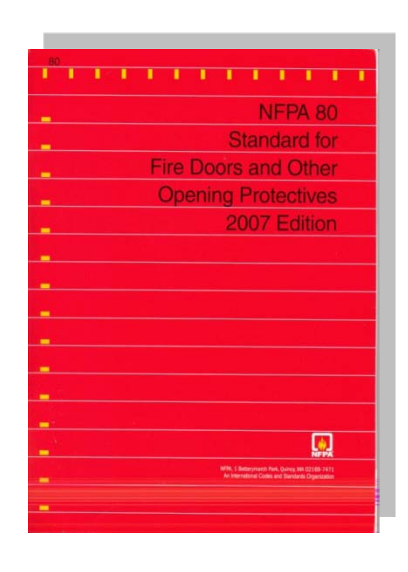
(4) No parts are missing or broken.

(5) Door clearances do not exceed the clearances listed.



NFPA 80 2007—Standard for Fire Doors

- **5.2.4.2 As a <u>minimum</u>, the following items shall be verified:**
  - (6) The self-closing device is operational
  - (7) If a coordinator is installed, the inactive leaf closes before active leaf. (pairs only)
  - (8) Latching hardware operates and secures the door when it is in the closed position.



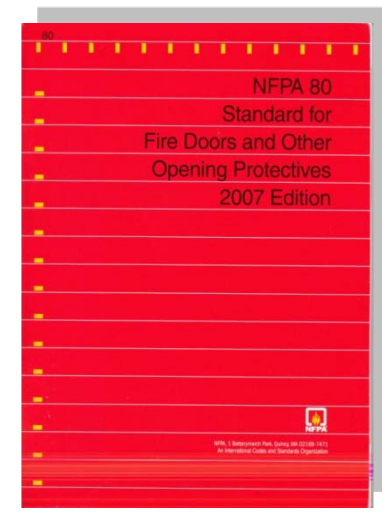
NFPA 80 2007—
Standard for Fire Doors

- **5.2.4.2 As a <u>minimum</u>, the following items shall be verified:**

(9) Auxiliary hardware items that interfere or prohibit operation are not installed.

(10) No field modifications to the door have been performed.

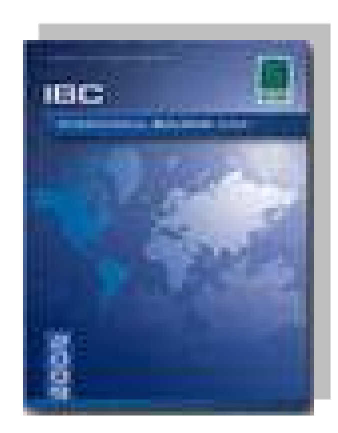
(11) Gasketing and edge seals are inspected.

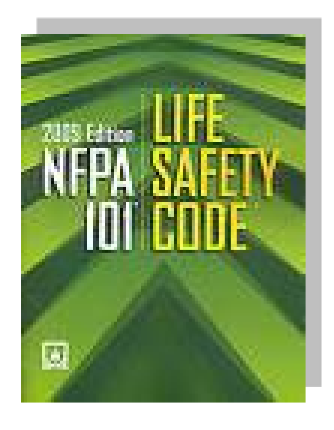


Fire Door Inspection—Background

- **Fire Doors are governed by the building code and NFPA throughout design, specification, installation and occupancy permitting.**







IFC 2009—703.1.3

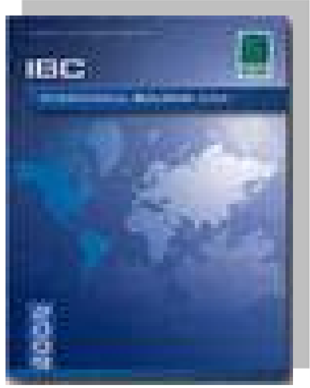
- **Fire walls, fire barriers and fire partitions. Required fire walls, fire barriers and fire partitions shall be:**

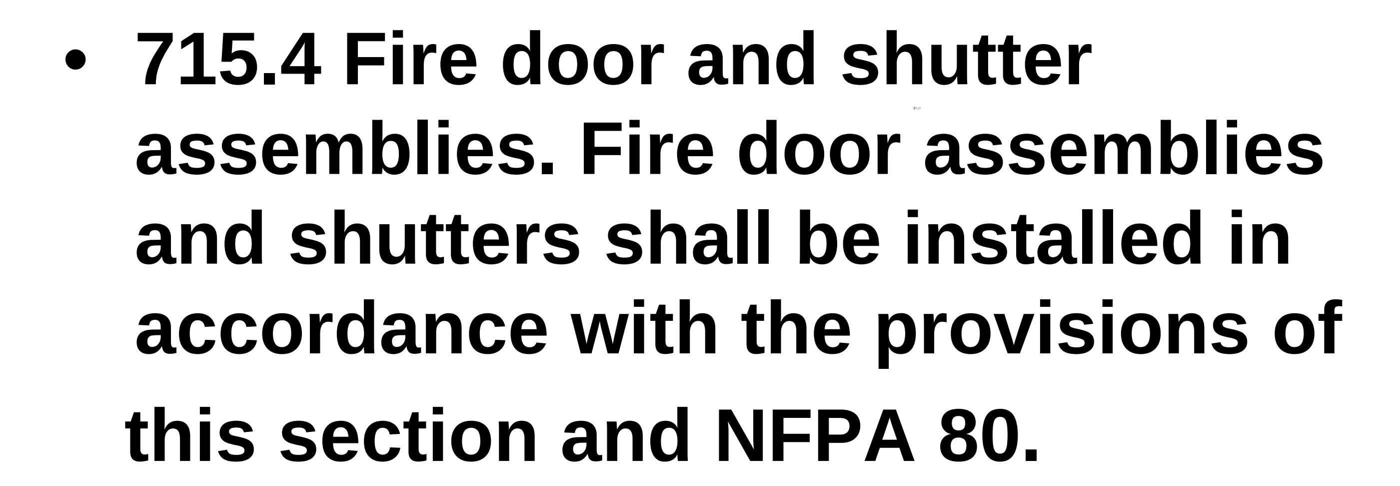


  - Maintained to prevent the passage of fire.
  - All openings protected with approved doors and fire dampers shall be maintained in accordance with NFPA 80.

Fire Door Inspection—IBC

- The International Building Code is used until the certificate of occupancy is issued.



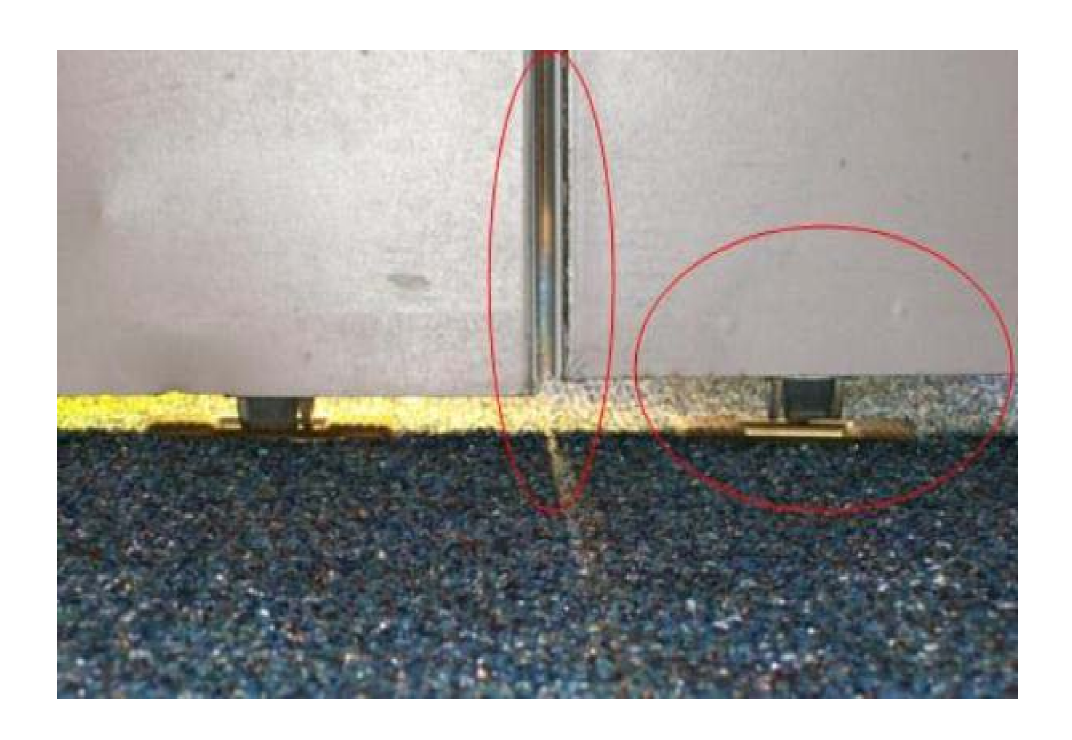


- 715.4 Fire door and shutter assemblies. Fire door assemblies and shutters shall be installed in accordance with the provisions of this section and NFPA 80.

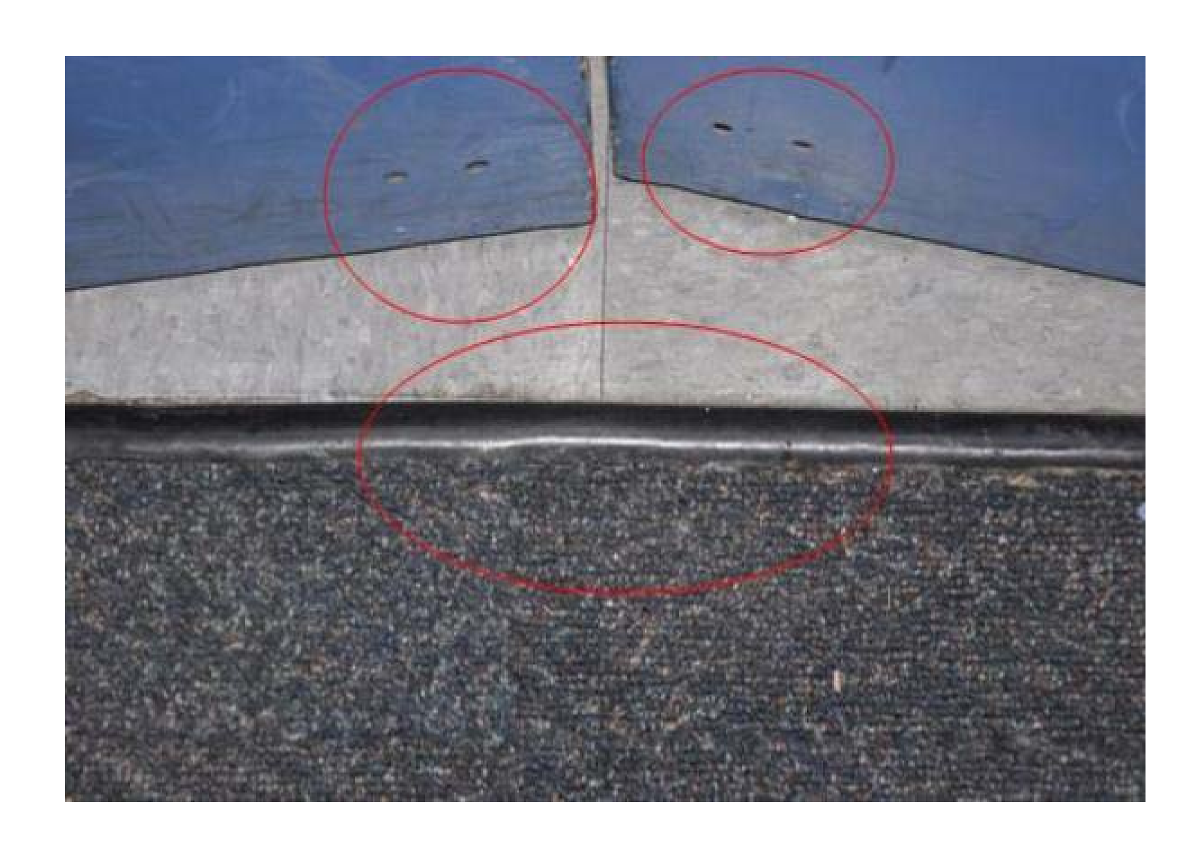
Fire Door Inspection—NFPA 101

- **7.2.1.15.2 – Fire-rated door assemblies shall be inspected and tested in accordance with NFPA 80, *Standard for Fire Doors and Other Opening Protectives.***

Inspection Examples



Inspection Examples



Inspection Examples



Inspection Examples



Existing Fire Doors Today



Heat Release Mechanism

Existing Fire Doors Today



Confused?



NFPA 80—Chapter 4 General Requirements

- **Fire Door Assemblies**
  - Prepared for Hardware Under Door/Frame Manufacturer's Inspection Service Procedure and Under Label Service [4.1.3.1]
- **Listed and Labeled Products**
  - Listed items shall be identified by a label, which is readily visible to AHJ. [4.2]

NFPA 80—Chapter 4

- **What Modifications Can Be Done in the Field?**
  - Function Holes for Mortise Locks/Latches
  - Holes for Labeled Door Viewers
  - Round Holes for Surface Applied Hardware (up to 1” in Diameter)
    - Throughbolts
  - Wood/Composite Doors Trimmed to Maximum 3/4” Undercutting
  - [4.1.3.2, 4.1.3.3 and 4.1.3.4]

NFPA 80—Chapter 4

Field Modifications that CAN NOT be done in the field:

- **Doors**
  - No Vision Panel Cut Outs
  - No Louver Cut Outs
  - No Mortise Lock Pockets
  - No Face or Edge Bores for Bored Locks
  - No Mortise Hinge Preparations
- **Frames**
  - No Mortise Hinge Preparations
  - No Cut Outs

NFPA 80—Chapter 4

- **Clearances Under Doors**
  - Swinging Doors with Builders Hardware
    - Maximum Clearance of 3/4” Under Door Bottom
    - [4.8.4.1]

NFPA 80—Chapter 6

- **Builders Hardware Consists of:**
  - Hinges & Pivots
  - Door Bolts
  - Locks or Latches
  - Fire Exit Hardware (a.k.a. Exit Devices)
  - Door Closers
  - Protection Plates
  - Astragals
  - Gasketing

Fire Resistance Classifications

- **Hourly Ratings**

1/3	=	20-Minutes
3/4	=	45-Minutes
1	=	60-Minutes (Wood Doors)
1-1/2	=	90-Minutes
3	=	180-Minutes

Note: This information is listed under Annex D. “Fire Doors and Fire Window Classifications.” The hourly designation indicates duration of the fire test exposure. It is known as the fire protection rating.

Fire Labels for Frames







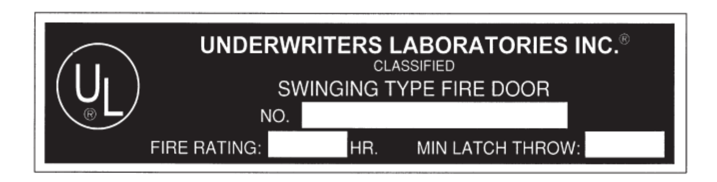


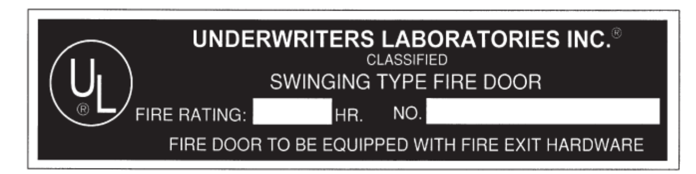


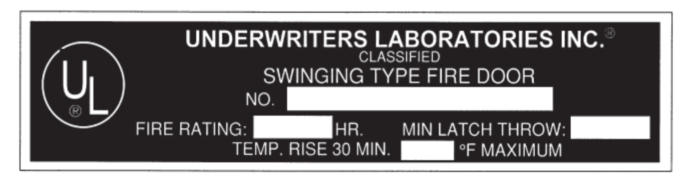


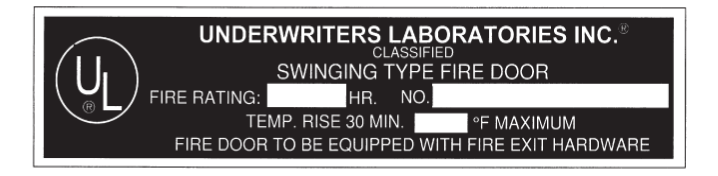


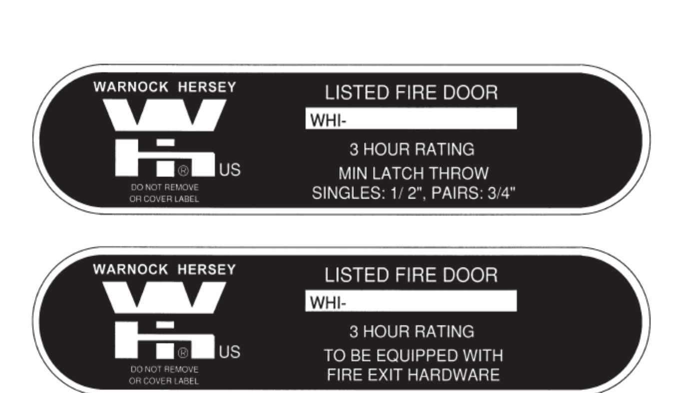
Fire Labels for Doors



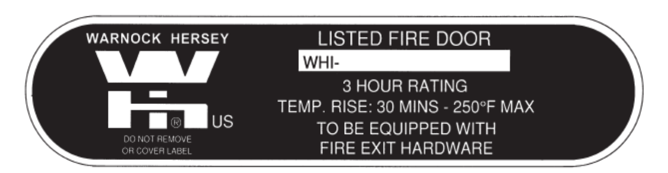










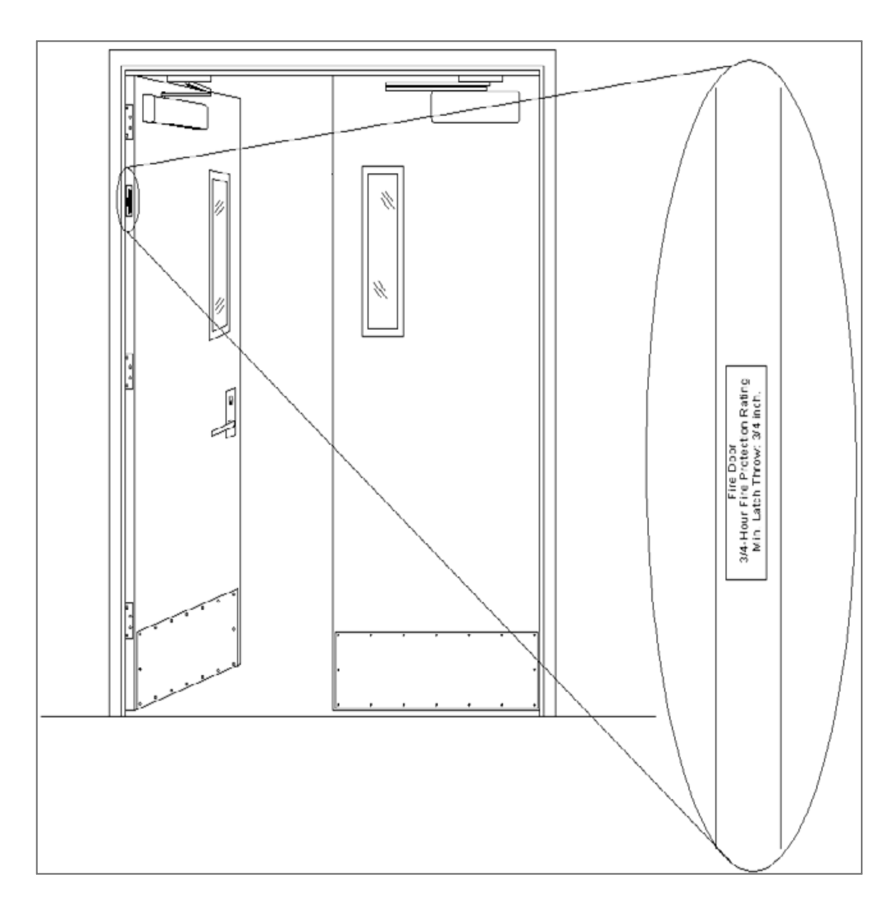


Criteria Listed on Label

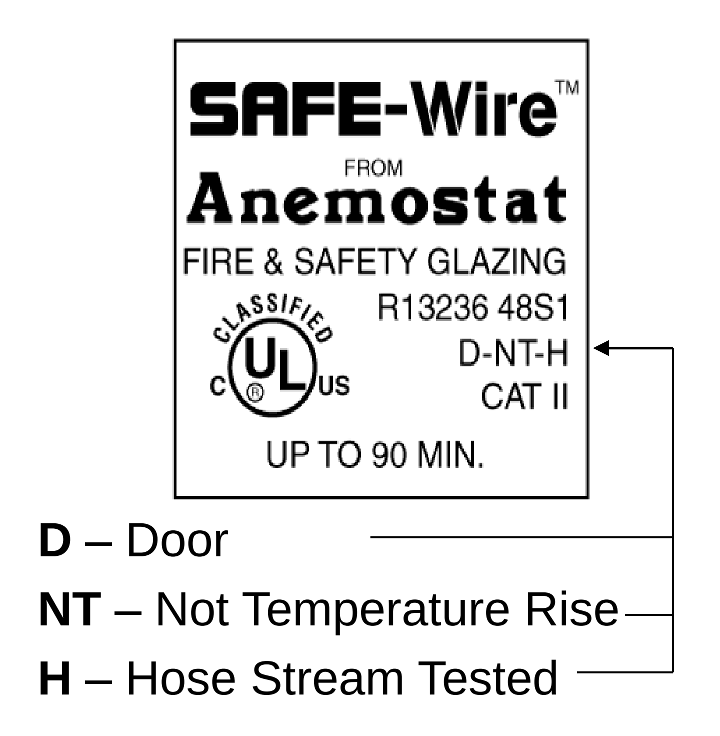


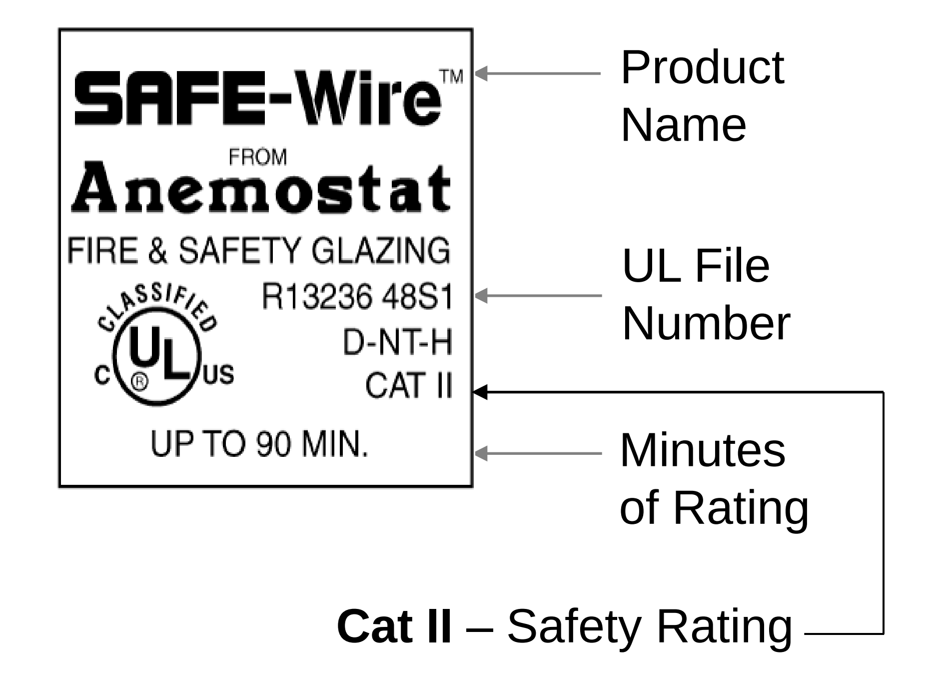
Label Placement

Label should be attached to the hinge edge of the door.



Glass Label
(Permanent etching, per NFPA 80)







Annual Inspection Requirements—NFPA 80

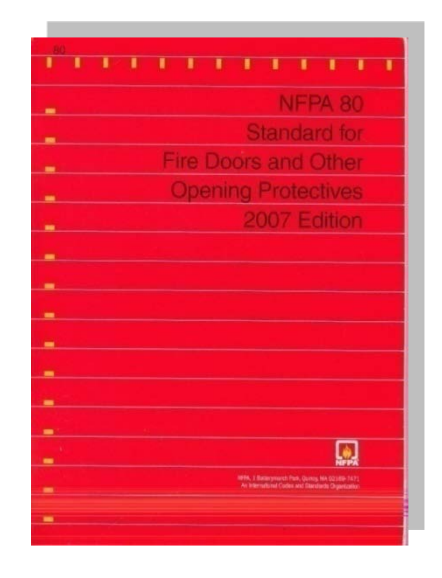
Swinging Doors with Builders Hardware



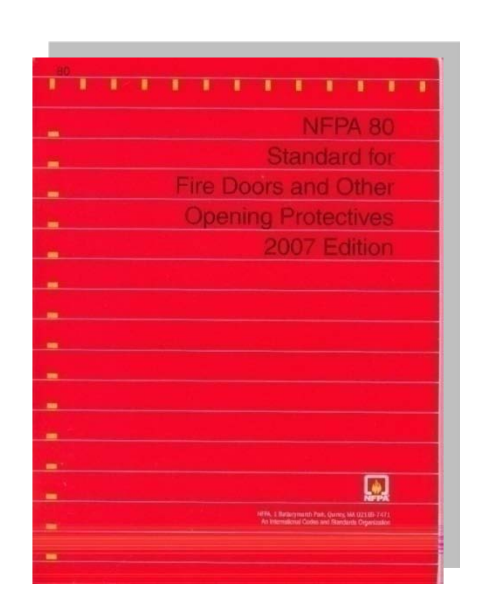
NFPA 80 2007— Standard for Fire Doors

Chapter 5 Care & Maintenance

- 5.1.1.2 The requirements of this chapter shall apply to **new and existing** installations.



NFPA 80 2007— Standard for Fire Doors



Chapter 5

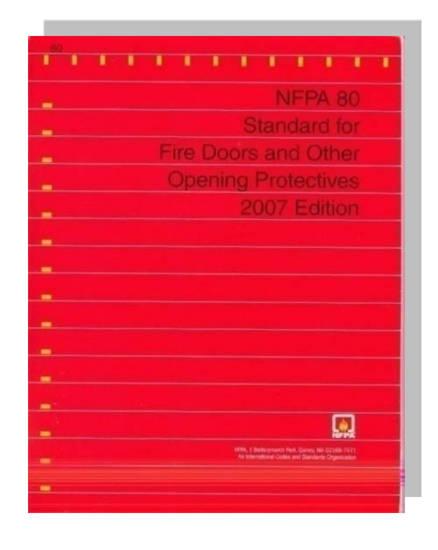
Care & Maintenance

5.2.1* **Fire door assemblies shall be inspected and tested not less than annually, and a written record of the inspection shall be signed and kept for Inspection by the AHJ.**

NFPA 80 2007—Standard for Fire Doors

Chapter 5 Care & Maintenance

5.2.3.1 Functional testing of fire door and window assemblies shall be **performed by individuals with knowledge and understanding** of the operating components of the type of door being subject to testing.



Annual Inspection of Fire Door Assemblies

- **What Do Inspectors Need to Know?**
  - Immense product application and installation knowledge
    - Hollow metal doors and frames
    - Wood fire doors
    - Builders Hardware Application
  - Thorough understanding of NFPA 80 requirements
  - Benchmark – Fire Door Assembly Inspector (FDAI) program.
  - Years of industry experience to qualify for prereq for AHC and/or CDC.

Annual Inspection of Fire Door Assemblies

- **Inspector's Responsibilities:**
  - Status of door openings on date of inspection
  - Recommend necessary corrections
  - Providing written inspection reports

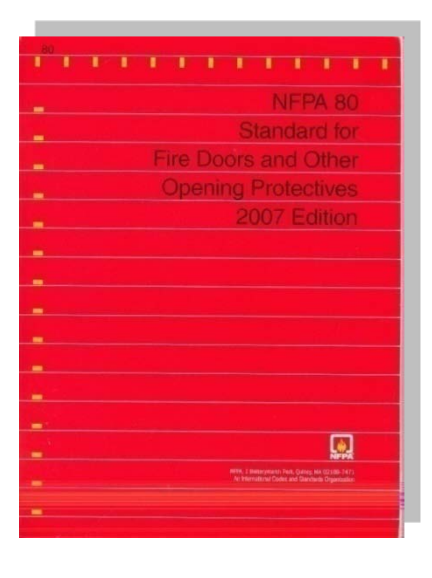
Annual Inspection of Fire Door Assemblies

- **Inspectors Are Not Responsible For:**
  - Making sure openings are repaired
  - Determining the correct fire-rating of door openings
  - Alerting AHJ of problems

NFPA 80 2007—Standard for Fire Doors

Chapter 5 Care & Maintenance

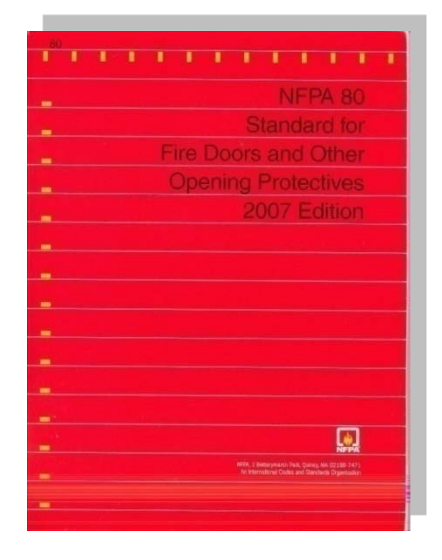
- **5.2.2 Performance-Based Option**
- **5.2.2.1 As an alternate means of compliance with 5.2.1, subject to the AHJ, fire door assemblies shall be permitted to be inspected, tested, and maintained under a written, performance-based program.**



NFPA 80 2007— Standard for Fire Doors

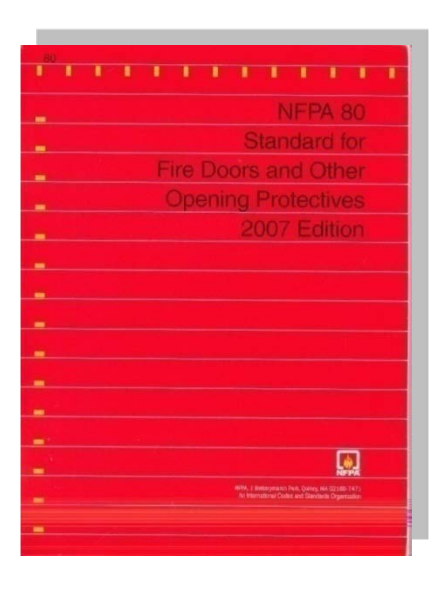
Chapter 5 Care & Maintenance

- **5.2.2 Performance-Based Option.**
- **5.2.2.2 Goals established under a performance-based program shall provide assurance that the fire door assembly will perform its intended function when exposed to fire conditions.**
- **5.2.2.3 Technical justification for inspection, testing, and maintenance intervals shall be documented.**



NFPA 80 2007—
Standard for Fire Doors
Chapter 5 Care & Maintenance

- **5.2.2 Performance-Based Option.**
- **5.2.2.4 The performance-based option shall include historical data acceptable to the AHJ.**



MGM Grand Hotel
Fire Door Inspection

Example. Without Performance-Based Option

- January 1st – Two inspectors start inspecting doors.
  - Each inspector works 40 hours a week for a full year.
- December 31st – All doors have been inspected.
- January 1st – Start all over again.



Preparing for the Inspection









Identifying Fire Door Assemblies

- **Maintenance personnel–access to the ‘as built’ floor plans.**
- **AHJ’s office archived copies of floor plans**
- **No plans available–should physically check each door opening looking for labels.**

Locating Fire Doors in Buildings

- Interior doors opening into and out of stairwells and corridors.
- Door openings placed at building separations.
- Identify fire labels on frame and hinge side of door.

Performing the Inspections

- Presumption of Correct Application
- Original Building, Fire and Life Safety Code Requirements
- Practical Application of Inspection Criteria

Original Building, Fire, and Life Safety Requirements

- Inspectors should be cognizant of the building, fire and life safety codes that were applicable at the time of installation.
- Should not apply the capabilities, limitations and requirements for modern products to assemblies installed years ago.
- NFPA 80 standard is applicable to all existing fire door assemblies, regardless of when they were installed.

Cataloging Fire Doors

- Door Number (Code or Symbol)
- Location of Assembly in Building
- Type of Door Assembly
- Fire-Protection Rating
- Comments/Remarks

Inspection Summary Report Form

INSPECTION SUMMARY
REPORT **2008**

FDAI[SM]
A Program of the Door and Hardware Institute

Date of Inspection ____________, 2008

Inspector Information

Name: ____________

ID Number: ____________ Exp. Date: ____________

Inspecting Company Information

Name: ____________

Address: ____________

BUILDING NAME ____________

ADDRESS ____________

SUMMARY ____________

SAMPLE

dhi

The undersigned acknowledge and agree that Inspector only is inspecting the Building's fire door assemblies existing on the date of the inspection and identified on this Inspection Form for compliance with the requirements of NFPA 80 2007 Edition; Section 5.2 as of the time of the inspection, and that Inspector is not inspecting any other openings in the Building or performing an architectural evaluation of the Building. The undersigned hereby agree that, to the fullest extent permitted by law, the total liability of Inspector, Inspecting Company and any other person or entity for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in any way related to the inspection from any cause or causes including but not limited to negligence, errors, omissions, strict liability, breach of contract or breach of warranty shall not exceed the total amount of the inspection fee. The Door and Hardware Institute ("DHI") assumes no liability for the conduct of the Inspector, Inspecting Company or others or the inspection, and the undersigned hereby release DHI from all liability related thereto or arising therefrom.

OFFICIAL USE ONLY

(Insert Seal or Stamp)

SIGNATURES

Signature of Inspector ____________ Signature of Building Manager ____________

*Please retain for your records.
("White" copy is ORIGINAL • "Pink" copy is DUPLICATE COPY • "Yellow" copy is INSPECTOR'S COPY)

FORM 1

FDAI Inspection Report

FIRE-RATED SWINGING DOOR
INSPECTION SURVEY **2008**



Date __________ , 2008
Pg. ______ of ______

BUILDING NAME ______________________________

Door Number	Compliant	Non-Compliance Code(s)* (Please use codes found on back of this sheet as a general guide)
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	
	❑ YES ❑ NO	

* Exceptions/Comments/Remarks are to be noted below.

COMMENTS ______________________________

FDAI Code Violations Defined

Please use the following codes to identify problems on the door openings listed on other side of page.

FRAME

- F1 Loose Frame
- F2 Damaged Frame
- F3 Rust-through on Frame
- F4 Missing Label
- F5 Frame is Out of Alignment
- F6 Incorrect Glass in Sidelight or Transom-light
- F7 Broken Glass in Sidelight or Transom-light
- F8 Missing Glazing Bead at Light(s)
- F9 Missing Glazing Bead Screw(s)
- F10 Improper Field Modification (Explain Modification)
- F11 Incorrect Hardware Preparation (Explain)
- F12 Unused Fastener Hole(s) in Frame
- F13 Other ____________

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DOOR

- D1 Missing Door(s)
- D2 Missing Label
- D3 Damaged Door(s) (e.g., Dented, Bent)
- D4 Rust-through on Door(s)
- D5 Delamination of Door Skin or Face
- D6 Incorrect Glass in Light(s)
- D7 Broken Glass in Light(s)
- D8 Light(s) is/are Too Large
- D9 Loose Light Kits
- D10 Missing Light Kit Screw(s)
- D11 Improper Field Modification (Explain Modification)
- D12 Incorrect Hardware

DOOR (cont.)

- D13 Unused Fastener Hole(s) in Door(s)
- D14 Improper Plant-ons
- D15 Replace Door
- D16 Other ____________

____

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OPERATIONAL TEST

- T1 Door Does NOT Swing Freely
- T2 Door Does NOT Close Completely
- T3 Door Does NOT Securely Latch
- T4 Electric Door Release Does NOT Allow Door to Close
- T5 Door Bottom Drags Against Floor Material
- T6 Door Rubs Against Frame
- T7 Edges of Paired Doors Overlap
- T8 Coordinator Does NOT Function Properly
- T9 Other ____________

____

____

HINGES/PIVOTS

- H1 Missing Hinge(s)
- H2 Incorrect Hinge(s)
- H3 Loose Hinge(s)
- H4 Missing Screw(s)
- H5 Replace Hinge(s)
- H6 Other ____________

____

DOOR BOLTS

- B1 Missing Top Flush Bolt
- B2 Missing Bottom Flush Bolt
- B3 Missing Strike (Top Bolt)
- B4 Missing Strike (Bottom Bolt)
- B5 Bottom Bolt does NOT Engage Strike
- B6 Missing Bolt Head (Top)
- B7 Missing Bolt Head (Bottom)
- B8 Missing Rub Plate(s)
- B9 Incorrect Type of Flush Bolt(s)
- B10 Other ____________

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LOCKS

- L1 Missing Lock
- L2 Incorrect Latch Bolt Throw
- L3 Non-fire Rated Latch Bolt
- L4 Latch Bolt Binds
- L5 Latch Bolt Missing
- L6 Loose Lever(s) or Knob(s)
- L7 Latch Bolt Does NOT Engage Strike
- L8 Missing Strike Plate
- L9 Missing Screw(s)
- L10 Missing Flush Bolt
- L11 Missing Flush Bolt Strike
- L12 Other ____________

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FIRE EXIT HARDWARE

- E1 Missing Fire Exit Device
- E2 Missing Latch Bolt Assembly (Top)
- E3 Missing Latch Bolt Assembly (Bottom)
- E4 Missing Strike(s)
- E5 Missing Vertical Rod (Top)
- E6 Missing Vertical Rod (Bottom)
- E7 Push Bar Does NOT Extend Halfway Across Door Width
- E8 Non-fire Rated Panic Hardware (Dogging)
- E9 Missing Lever or Knob
- E10 Missing Screw(s)
- E11 Missing Sex Nuts and Bolts
- E12 Mullion
- E13 Other ____________

____

____

DOOR CLOSERS

- C1 Missing Door Closer(s)
- C2 Leaking Door Closer(s)
- C3 Missing Arm(s)
- C4 Broken Arm(s)
- C5 Missing Closer(s)
- C6 Does NOT Close Door Completely
- C7 Missing Screw(s)
- C8 Missing Drop and/or Adapter Plate(s)
- C9 Hold-open Arm(s)
- C10 Missing Coordinator
- C11 Missing Carry Bar
- C12 Broken Coordinator
- C13 Broken Carry Bar
- C14 Overhead Hold-open (Surface or Concealed)
- C15 Other ____________

____

____

MISCELLANEOUS

- M1 Missing Threshold/ Saddle
- M2 Incorrect Clearance (Top of Door to Frame)
- M3 Incorrect Clearance (Hinge Edge to Frame)
- M4 Incorrect Clearance (Lock Edge to Frame)
- M5 Incorrect Clearance (Door Bottom to Floor)
- M6 Incorrect Clearance (Between Doors)
- M7 Missing Astragal
- M8 Missing or Damaged Gasketing/Smoke Seal
- M9 Kick-down Door Holder
- M10 Door Wedge
- M11 Door Stop with Hold Open (Manual)
- M12 Protection Plate(s) too Large
- M13 Protection Plate(s) Missing screw(s)
- M14 Signage Too Large
- M15 Signage, Screwed/ Nailed to Door
- M16 Other ____________

____

____





Items to be Verified During Fire Door Inspection









Three Main Operational Requirements

- **Swinging Fire-Doors with Builders Hardware Must:**
  - Swing Freely
  - Be self or automatic-closing or power-operated
  - Positively latch when in the closed position.

NFPA 80 2007—Standard for Fire Doors

5.2.4.2 As a <u>minimum</u>, the following items shall be verified:

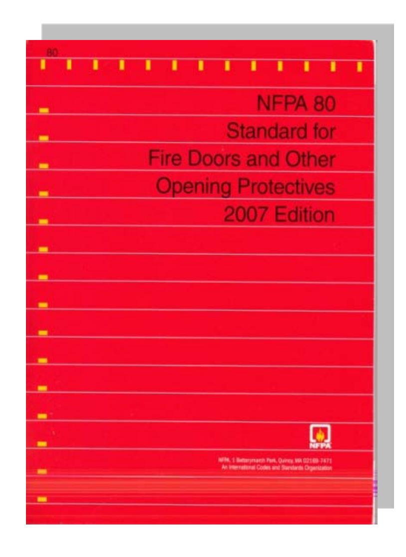
(1) No open holes or breaks exist in surfaces.

(2) Glazing, vision light frames, and glazing beads are intact.

(3) The door, frame, hinges, hardware, and noncombustible threshold are secured, aligned, and in working order.

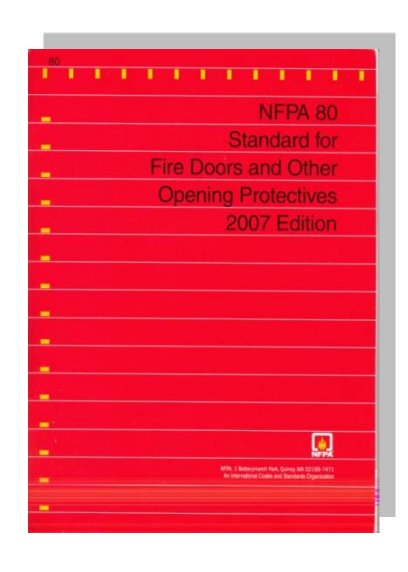
(4) No parts are missing or broken.

(5) Door clearances do not exceed the clearances listed.



NFPA 80 2007—Standard for Fire Doors

- **5.2.4.2 As a minimum, the following items shall be verified:**
  - (6) The self-closing device is operational
  - (7) If a coordinator is installed, the inactive leaf closes before active leaf. (pairs only)
  - (8) Latching hardware operates and secures the door when it is in the closed position.



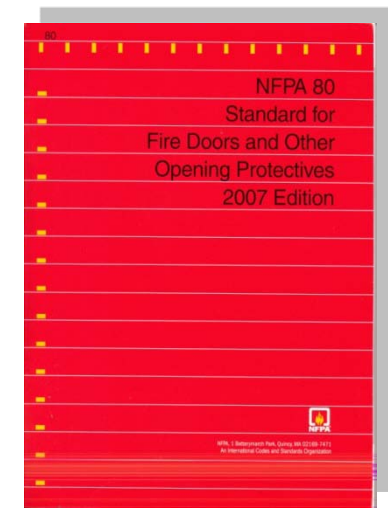
NFPA 80 2007—
Standard for Fire Doors

- **5.2.4.2 As a <u>minimum</u>, the following items shall be verified:**

  (9) Auxiliary hardware items that interfere or prohibit operation are not installed.

  (10) No field modifications to the door have been performed.

  (11) Gasketing and edge seals are inspected.



Campus Fire Safety Right-to-Know Act

- **Language included in this legislation that addresses fire doors**
- ***Fire safety system: Any mechanism or system related* to the detection of a fire, the warning resulting from a fire, or the control of a fire including:**
  - Fire doors and walls that reduce the spread of a fire (required to be reported)

NFPA 80—
Annual Fire Door Inspection
Foundation-Published Guides



- ***AHJ Guide*** **and** ***Owner's Guide***
- ***Reference Guide for Inspecting Swinging Fire Doors with Builders Hardware***



- **www.doorsecuritysafety.org**
  - PDF of steps for simple inspection.

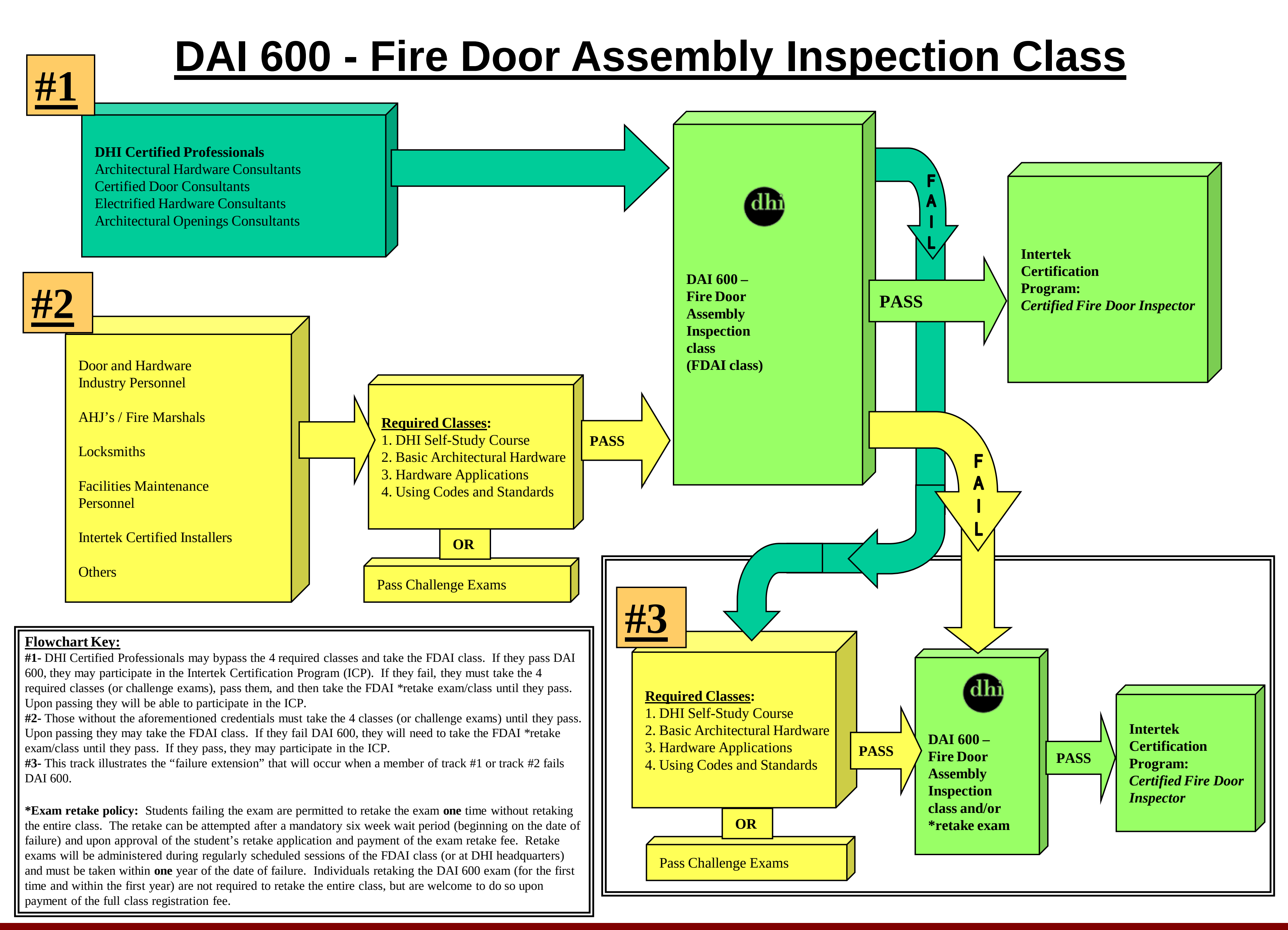
Summary

- **Not possible to list all of the applications of doors, frames and builders hardware products for swinging fire door assemblies.**
- **Covered the most commonly used products to give you, the AHJ, GUIDELINES on how to accurately evaluate the operating condition of swinging fire door assemblies.**

Summary

- **Many swinging fire door assemblies can be:**
  - Complicated.
  - Contain sophisticated hardware products.
  - These assemblies require a high-level of expertise to coordinate their functions with their fire-protection properties.

DAI 600 - Fire Door Assembly Inspection Class



Flowchart Key:

#1- DHI Certified Professionals may bypass the 4 required classes and take the FDAI class. If they pass DAI 600, they may participate in the Intertek Certification Program (ICP). If they fail, they must take the 4 required classes (or challenge exams), pass them, and then take the FDAI *retake exam/class until they pass. Upon passing they will be able to participate in the ICP.

#2- Those without the aforementioned credentials must take the 4 classes (or challenge exams) until they pass. Upon passing they may take the FDAI class. If they fail DAI 600, they will need to take the FDAI *retake exam/class until they pass. If they pass, they may participate in the ICP.

#3- This track illustrates the "failure extension" that will occur when a member of track #1 or track #2 fails DAI 600.

***Exam retake policy:** Students failing the exam are permitted to retake the exam **one** time without retaking the entire class. The retake can be attempted after a mandatory six week wait period (beginning on the date of failure) and upon approval of the student's retake application and payment of the exam retake fee. Retake exams will be administered during regularly scheduled sessions of the FDAI class (or at DHI headquarters) and must be taken within **one** year of the date of failure. Individuals retaking the DAI 600 exam (for the first time and within the first year) are not required to retake the entire class, but are welcome to do so upon payment of the full class registration fee.

Summary

- **New fire-rated products are:**
  - Continually being developed.
  - Requiring inspectors to stay current on their knowledge and understanding of these products' applications, capabilities and limitations.

Continued Focus

- **Foundation offerings in partnership with strategic partners**
  - One-day classroom training session
    - Based on DAI200 Class
  - Two & four hour awareness class
  - Introductory webinars
  - Online training module
  - Correspondence with state fire marshals offices
- **Promoting local champion**
- **Healthcare, colleges, GSA, hospitality**

For More Information Contact:





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- www.doorsecuritysafety.org
www.dhi.org